

FIELD STATION LOCATIONS AND MAGNETIC SUSCEPTIBILITY DATA FOR THE CHENA-POGO AND MOUNT HARPER PROJECTS, BIG DELTA AND CIRCLE QUADRANGLES, ALASKA, COLLECTED JUNE-SEPTEMBER 2023

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INTRODUCTION

During the 2023 field season, geologists from the Alaska Division of Geological & Geophysical Surveys (DGGS) conducted 1:100,000-scale bedrock geologic mapping of ~5,700 mi² (~15,000 km²) within the Big Delta and Circle quadrangles, Alaska. The field area for the Mount Harper project is north of Delta Junction and northeast of the Alaska Highway and extends southeast to 40–50 miles northwest of Tok. The Chena-Pogo project area is 0–200 miles south and east of Chena Hot Springs (fig. 1). The project areas are of current and historical interest for potential mineral resource development, including quartz vein gold (Au) systems, placer Au deposits, granite-hosted tin mineralization, and intrusion-related copper (Cu)–Au deposits. The Chena–Pogo and Mount Harper areas include the Pogo lode gold mine and the Healy, Lucky 13, Eagle, and many other prospects.

Portions of the field areas were mapped at 1:250,000 and 1:100,000 scale by the U.S. Geological Survey (USGS) in the 1960s and 1980s before modern understanding of Yukon Tanana Upland's geologic history (Foster and others, 1977; 1983; Weber and others, 1978) and before recent geophysical surveys (for example, Emond and others, 2022). Limited modern geologic mapping by the USGS and DGGS is present in the area (for example, Day and others, 2007; Werdon and others, 2004). The DGGS Mount Harper and Chena-Pogo projects aim to produce more accurate and integrated modern geologic maps and supporting datasets to promote mineral resource exploration in eastern Interior Alaska.

This report provides locations, field descriptions of rocks, and magnetic susceptibility measurements from rock outcrop and/or hand samples in each map area. The data associated with this report are available in digital format as a comma-separated value (CSV) file. All files can be downloaded from the DGGS website <https://doi.org/10.14509/31096>.

DOCUMENTATION OF METHODS

Location data for field stations were collected using GPS-enabled tablets or smartphones running the ESRI Field Maps app. Data were merged into an ArcGIS geodatabase. The devices have reported errors between 10 and 12 m. Latitude and longitude are reported in the WGS84 datum. Locations were converted to NAD83 coordinates to provide consistency with adjacent data.

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Field rock descriptions are observations and interpretations made by project geologists in the field. They may not be updated to reflect further observations, geochemical data, microscopic investigation, or other information. Field rock descriptions in this data file have not been reviewed for technical content and should be considered preliminary.

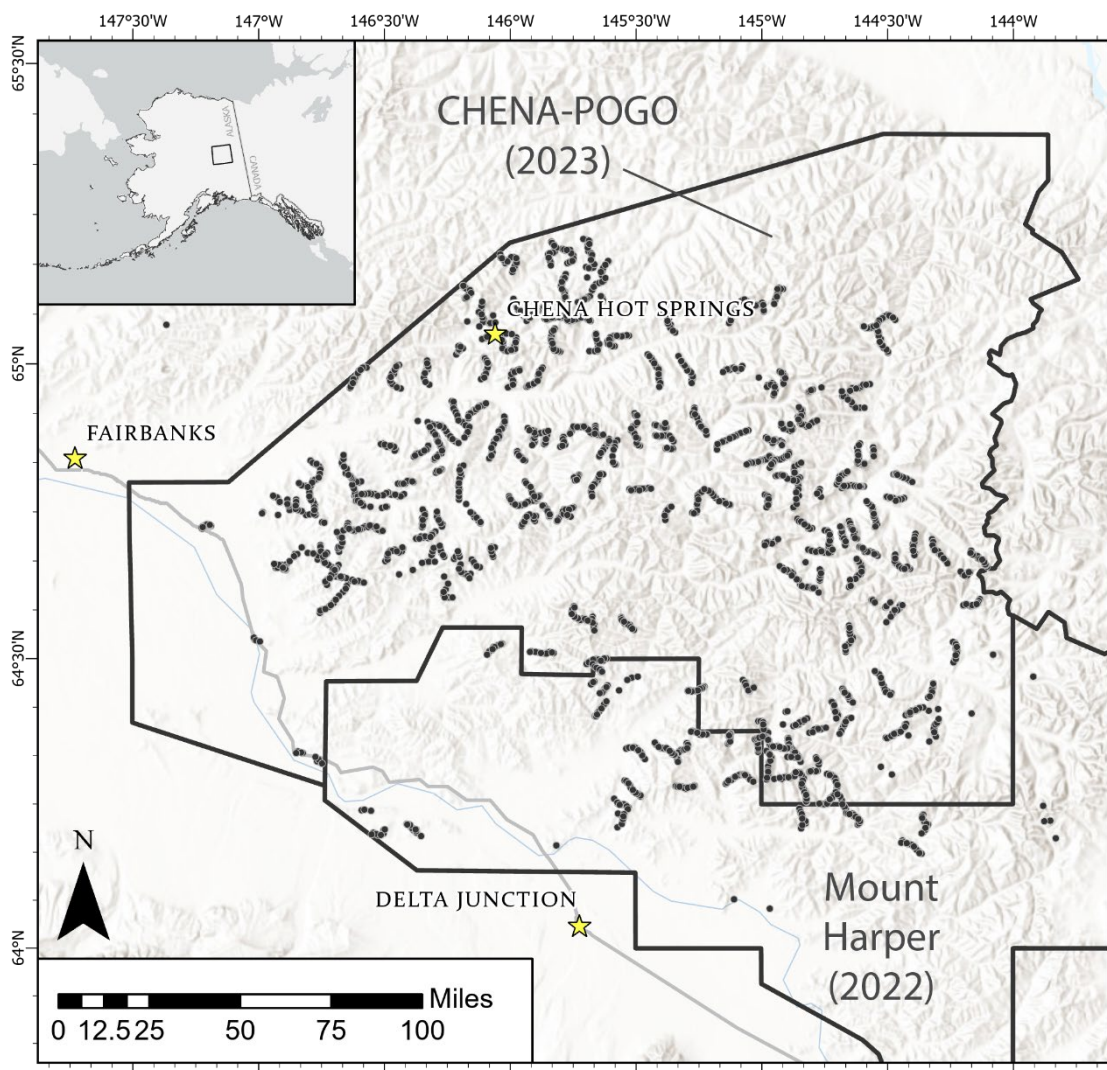


Figure 1. Station locations (gray dots) from the 2023 field mapping campaign. The Chena-Pogo and Mount Harper field areas are outlined in black.

Magnetic susceptibility measurements were collected using Terraplus KT-10 model handheld magnetic susceptibility meters. The KT-10 meters have a maximum sensitivity of 1×10^{-6} Système International (S.I.) units on smooth surfaces and a measurable susceptibility range between 0.001×10^{-3} and $1,999.99 \times 10^{-3}$ S.I. The values reported here are for individual measurements performed on representative surfaces of the sampled rock outcrop and/or hand samples. Up to 12 susceptibility readings were recorded at each field station. We measured multiple sides of outcrops and/or hand samples to avoid atmospheric effects whenever possible. Magnetic susceptibility was not measured at a small portion of field

stations because hand samples were intensely weathered or not large enough to cover the coil of the KT-10 meter for accurate measurement. These stations are presented with zero measurements for completeness.

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